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AUTHOR Creswell, John; Jones, Larry R.
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ABSTRACT

Deans from 53 colleges of arts, science, and humanities at major U.S. universities provided data about the structure of their colleges. These colleges were studied because structural changes are occurring and baseline data is needed. Forty-two percent of the deans reported that a formal study of reorganization of their colleges had taken place in the last five years. The basic research questions addressed were: what impact does the number of faculty or students (size) have on the number of departments (horizontal differentiation), administrative levels (vertical differentiation), or the proportion of administrators?; and do interdependent faculty networks, such as faculty committees, have a mediating influence on size, structure, and proportions of administration? Propositions developed by Peter Blau in his study of academic and employment security agencies form the conceptual framework for answering these questions. Results of the study (1) confirm the pervasive effects of size on structure; (2) challenge the evidence of prior studies that differentiation offsets the effects of size on the proportion of administrators; and (3) suggest that different forms of interdependent faculty networks have different effects on structure and the proportion of administrators. Implications of the findings for stable or declining enrollments in arts, science, and humanities colleges are discussed. (Author/MSE)

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DETERMINANTS OF STRUCTURE IN
ARTS, SCIENCE, AND HUMANITIES COLLEGES
IN MAJOR UNIVERSITIES:
A MACRO-SOCIOLOGICAL APPROACH

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John W. Creswell, Ph.D.
Associate Professor
Teachers College
University of Nebraska-Lincoln
Lincoln, Nebraska

Larry R. Jones, Ph.D.
Associate Director of Institutional Research
University of Georgia
Athens, Georgia

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Association for the Study of Higher Education

The George Washington University

One Dupont Circle, Suite 630

Washington, D.C. 20036

(202) 296-2597

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DETERMINANTS OF STRUCTURE IN
ARTS, SCIENCE, AND HUMANITIES COLLEGES
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In 1968, Blau developed a framework for the study of the relationship of the size of an organization to the number of its subunits and administrators. Blau (1968) defined size as the number of employees in the organization, the number of subunits as the number of major subdivisions, and the number of administrators as a proportion of managers to non-supervisory officials. Blau later refined this conceptual framework, based on data from employment security agencies, into a formal theory of differentiation in complex organizations (Blau, 1970, 1972) and applied it to institutions of higher education (Blau, 1973). From data drawn from these higher education institutions, Blau (1973) concluded that a positive relationship existed between the number of students and faculty and structural aspects such as the number of colleges, departments, and administrative levels. Without overlooking the importance of interpersonal or psychological factors, Blau chose to limit his study to the relationship of size variables to the structural aspects or macrosociological properties of institutions.

Blau's structural approach provided an explanatory framework for the study of the relationship between the number of students and faculty and the structure of those colleges in major universities that contained the arts, science, and humanities departments. The major question addressed in this study was: what relationship exists between the number of faculty or students (size) and the number of departments (horizontal differentiation of structure), administrative levels (vertical differentiation of structure), and the ratio of administrators to faculty (proportion of administrators in the structure)? As distinguished from prior studies on size and structure

in complex organizations, this analysis also reviewed the relationship between the interdependency of faculty in the colleges indicated by committees and collaborative efforts and structure. The importance of interdependency of workers in an organization had been suggested by Blau (1972), Hall (1972), and Milleti (1977), but had not been formally tested. While Blau's (1973) study reported data for entire institutions, this study only analyzed data for colleges of arts, science, and humanities in major universities. These colleges were studied because they typically represent a large percentage of the undergraduate students in major universities and may be the first subunit in institutions to change their structure in response to stable or declining student enrollments.

ARTS, SCIENCE, AND HUMANITIES COLLEGES

The present study builds on an earlier analysis of the structure of arts, sciences, and humanities colleges at five major universities (Creswell and Jones, 1978). To develop that study, the authors visited with collegiate academic officers, administrative staff, and faculty to determine the general structure of the colleges and to identify those factors which appeared related to the structure. Spurr's (1968) three categories of the structure of liberal arts colleges, while sometimes an imprecise fit, were validated during the interviews. The first category was the "patchwork structure" with faculty grouped into committees, departments and interdepartmental programs. The authors found this type of structure most apparent on the campuses where the arts, science, and humanities faculties reported directly to a single dean. The second type of structure, the "subject matter approach" with departments organized into three areas, the physical sciences, biological and social sciences, and the humanities, was found on campuses where homogeneous departments had merged into larger units sometimes termed "schools"

or "divisions." Spurr called the third category the "sub-college" model similar to Oxford and Cambridge Universities with independent colleges on the same or adjacent campuses. This structural form appeared at the university where a federation of separate and distinct colleges for the arts, sciences, and humanities had been organized.

Individuals interviewed also discussed those factors that seemed to contribute to the present organizational structure of their colleges. The increasing size of the student enrollment and the number of faculty, especially evident in the 1960's, often led to the division of larger units into smaller ones. More recently, however, insights into the nature of knowledge and classroom instruction in content areas of the colleges had led to the merging of departments or interdisciplinary team-taught courses. Another important factor was the need for the colleges to present a unified appeal for resources within the competitive university budget process. This need often held departments of arts, science, and humanities together rather than divide them into "divisions" or separate colleges. Individuals interviewed also cited the importance of decisions made by university administrators to maintain or realign the college structure in order to centralize or decentralize the decision-making process.

These factors--size, the nature of work (or technology), the environment, and administrative decisions--are well-known factors affecting organizational structure discussed elsewhere by sociologists (Blau, 1972; Hall, 1972). To limit this study, only the factors of size and the nature of work were used to predict the structure of the colleges. While size was defined as the number of FTE faculty in the college and the student headcount, the nature of work, called interdependency in this study was defined as the number of faculty standing committees, and the collaboration of faculty in resolving issues and teaching courses.

SIZE, INTERDEPENDENCY, AND STRUCTURE

As the first conceptual framework, the authors used theorems modified from Blau's 1973 work based on empirical data collected at four year institutions granting liberal arts degrees:

1. Large organizational size is positively related to increased horizontal and vertical differentiation.
2. Large organizational size is negatively related to the proportion of administrators while increased differentiation is positively related to the proportion of administrators.

With respect to the first theorem, Blau (1973) found that the size of an institution is highly correlated with the number of academic departments and the number of administrative levels. He assumed that large size led to more specialized areas of study and to more administrative levels to relieve the central administration of excessive supervisory burdens. A simple illustration can describe these effects. Assume that student enrollments for arts and science college A are 3,000 and for arts and science college B, 5,000. Further assume that college A has 10 departments and college B, 30 departments. The larger number of departments in college B may be due to the greater number of students in the college who seek special programs of study. Additionally, college B may have more administrative layers, such as division coordinators, to relieve the dean of direct responsibility for an excessive number of department chairs. Thus, the larger the arts and science college, the larger the number of sub-units (horizontal differentiation) and administrative layers (vertical differentiation).

Contrary to the conventional wisdom that large organizations have proportionally more administrators than small ones, Blau (1972, 1973) found just the reverse to be true. He explained this finding by reviewing the opposite effects of the size of the organization and the number of sub-units on the proportion of administrators. Organizations with a large number of subunits often had problems of coordination and communication resolved by adding

administrators. In the study of a plastics industry, Lawrence and Lorsch (1967) found that a differentiated industry added groups or departments of individuals to facilitate collaboration among the managers and workers. Blau (1972, 1973) also found what size had on the effect of lowering the proportion of administrators. This reduction followed because despite the large size of an institution, administrators had a larger span of control than the administrators in smaller institutions. Additional work that accrued as a result of more students and faculty was often subsumed under existing administrators rather than new administrators. Also, this situation occurred when the additional responsibilities were similar to the current responsibilities for the administrator.

The net effective of size and differentiation on the proportion of administrators was for size to decrease the proportion and differentiation to increase the proportion. As an illustration, again assume that 3,000 students are enrolled in college A and 5,000 in college B. In both colleges, 15 full-time administrators work: 14 department heads and 1 dean. This means that college A has a ratio of $15/3,000$ or .005, and college B has $15/5,000$ or .003. The situation exists that the larger the enrollment in the college, the smaller the proportion of administrators. Now assume that the faculty and administrators in college B decide that two departmental heads should become coordinators and that these heads are given administrative assignments. In college B, 17 administrators now exist--14 chairs, 2 division heads, and 1 dean. In college A, the ratio of administrators to students remains $15/3,000$ or .005, while in college B the ratio becomes $17/5,000$ or .0034. While the size of the enrollment in both colleges remains constant, the increased administrative layers (vertical differentiation) in college B contributes to an increased proportion of administrators while increased differentiation raises the proportion.

Several authors have suggested that factors other than size may effect

the structure of an organization. Pugh et. al. (1968) argued that size is related to structure through intervening variables such as frequency of decisions and social control. Child (1973) found complexity (differentiation) to be predicted by size, by a more integrated and automated technology, and by a greater range of activities contracted out to other organizations. In discussing the influences of structure, Hall (1972) pointed out the importance of technology, environment, and choice. Blau's 1972 research on government bureaus, private firms, universities and colleges, and hospitals suggested that "extensive differentiation of an organization's responsibilities intensifies the degree of interdependence among the functions of the subunits (p. 12)." In academic institutions, the high rate of formation of new departments is attributed by Blau (1973) to the merger of subunits with common academic interests for the purpose of interdisciplinary courses or joint research projects.

The specialization of large colleges tends to encourage heterogeneous departments, engenders problems of coordination and communication, and may lead to the formation of interdependent faculty networks. Interdependent faculty networks in this study are defined in three ways: number of faculty standing committees in the college, extent of collaboration among faculty in teaching, and the extent of coordination among faculty for resolving key issues (workflow) in the college. Mohr's (1971) definition of interdependency based on degree of collaboration to deliver or produce services of a unit and Van de Ven's et. al. (1976) definition based on the extent to which unit personnel are dependent on one another to perform their individual jobs were used in constructing the three operational definitions of interdependency.

While interdependent faculty networks, such as faculty committees or collaborative teaching, may help reduce some of the problems of coordination,

these networks may have the alternative effect of increasing the need for administrators. Blau (1973) has suggested that the presence of many different interdependent jobs in an organization requires much coordination: for example, the arts and science college that adds an assistant dean for interdepartmental research in response to increased interdisciplinary research projects. Given these alternatives, two propositions in addition to the two modified theorems were added for study:

3. Increased differentiation leads to increased interdependent faculty networks.
4. Increased interdependent faculty networks lead to an increased proportion of administrators.

STUDY METHODS

The study sample was chosen from a population of 178 research and doctoral granting institutions as defined by the Carnegie Commission on Higher Education (1973). A random sample of sixty institutions, stratified by institutional size, with a total of seventy-five associated colleges of arts, sciences, and humanities was selected for study. The authors developed a questionnaire which was pilot-tested, revised, and then sent to the deans of the seventy-five colleges. Descriptive statistics were first determined for the major variables in the study followed by a factor analysis to examine the factor loadings of the variables. Before regression analyses were made to test the propositions, tests for curvilinearity were conducted using dummy variables (Kerlinger and Pedhazur, 1973) since Blau (1973) had found a curvilinear relationship between size and differentiation.

STUDY FINDINGS

Fifty-seven of the 75 deans of arts, science, and humanities colleges responded to the questionnaire for a useable response rate of 76 percent. Of the deans that replied, 46 percent or 26 reported that their college had

undertaken a formal study of reorganization in the last five years and of these 26, 12 had completed studies during 1978. When the deans were asked if a single college which contained the arts, science, and humanities disciplines had been reorganized into more than one college during the last five years, only 11 percent indicated that reorganization had occurred. When asked if the departments in their college had been grouped into broad divisions or schools within the last five years, only 16 percent of the deans pointed out such reorganization. Table 1 presents other descriptive data collected for major variables addressed in this study.

In the factor analysis, three interdependency variables appeared on different factors and were used by the authors as separate items in the regression analyses. The dimensions of size and differentiation also loaded heavily on different factors and were kept distinct in later data analyses. The authors found only one curvilinear relationship, between faculty size and number of departments. However, when faculty size was squared for analysis, the regression equation did not differ significantly from linearity and faculty size squared was used in subsequent analyses. Table 2 presents the regression analyses. Following the general guideline discussed by Kerlinger and Pedhazur (1973) and Land (1969), only those variables with beta values greater than or equal to .05 are analyzed. With a small sample size, one would not expect large F ratios; however, the value of the study is not diminished since the pilot work by Blau (1968) relied on data from only 52 employment security agencies.

THE EFFECTS OF SIZE

The data presented in Table 2 both supports and contradicts the findings of prior studies that relate size to the number of departments, to the proportion of administrators, and to the number of hierarchical levels. Blau

(1973) found a positive relationship between student enrollments and the number of departments in an institution and an inverse relationship between student enrollments and the proportion of administrators. In the same and other studies (Blau, 1968, 1970, 1972, 1973; Blau and Schoenherr, 1971), Blau established a positive relationship between the number of employees (size) and the number of hierarchical levels in an organization. Consistent with Blau's study (1973) of academic institutions, results in this study showed that the number of students in the college was significantly related to the number of departments ($r=.39$) and inversely related to the proportion of administrators ($r=-.25$). Contrary to the Blau studies, the size of the faculty was only marginally related to the number of hierarchical levels ($r=-.05$). Thus, the larger the number of students in a college, the larger the number of departments and the smaller the proportion of administrators. Further, the size of the faculty had little relationship to the number of hierarchical levels in the college. As set forth in proposition 1, the expected impact of size on departments and proportion of administrators was confirmed but questions were raised about whether size is related to administrative levels in the college.

SIZE, DIFFERENTIATION, AND THE PROPORTION OF ADMINISTRATORS

From Blau's (1973) work, one would expect those colleges with a higher student enrollment to have a lower proportion of administrators and those colleges with more departments and administrative layers to have a higher proportion. As shown in Table 2, the size of student enrollments was negatively related to the proportion of administrators ($-.25$); however, contrary to expectations, the number of departments and administrative levels was also negatively related to the proportion. Specifically, the number of departments was significantly related to the proportion of

administrators with a beta weight of $-.26$. A decomposition of the simple r for the number of departments revealed that the size of student enrollments contributed a small negative indirect effect ($-.05$) to the negative direct effect of the number of departments ($-.24$). Thus, the larger the number of departments and the number of students, the lower the proportion of administrators to faculty. The data in this study only partially supported the second proposition: large organizational size was negatively related to the proportion of administrators but differentiation as measured by the number of administrative levels and the number of departments was not positively related as expected.

INFLUENCE OF INTERDEPENDENCY

What impact does measures of faculty collaboration such as the number of faculty committees, the extent of cooperative teaching and extent of coordinating issues in a representative assembly have on the number of departments, administrative levels, and proportion of administrators? Blau (1972, 1973) suggested that the more departments in an organization, the more one would find collaboration among the workers. As shown in Table 2, the coordination of issues (workflow) in the colleges had only a small positive influence on the number of hierarchical levels ($r=.05$). However, the coordination of issues (workflow) and the degree of faculty cooperation in the college was negatively related to the number of departments ($-.16$ and $-.25$ respectively). Apparently, colleges with more departments tended to have less coordination in resolving issues and cooperation in teaching undergraduate courses. Consequently, the expected positive relationship between interdependency and differentiation, as set forth in proposition 3, did not occur.

As stated in proposition 4, the greater the amount of faculty collaboration in a college, the larger the expected proportion of administrators in the dean's office to facilitate faculty communication and coordination. As shown in Table 2, none of the three interdependency variables, workflow, cooperation, and faculty standing committees, had beta weights that were statistically significant with the proportion of administrators. However, the direction of the correlation coefficients provided some insight into the expected impact of the interdependency variables. The coordination of issues (workflow) and the number of undergraduate courses that were team taught (cooperation) were positively related to the proportion of administrators ($r=.24$ and $r=.16$ respectively), while the number of faculty standing committees in the college was negatively related ($r=-.12$). A decomposition analysis of the direct effect of each interdependency variable on the proportion of administrators indicated very little indirect effects of other variables in the regression equation. In summary, two of the three measures of interdependency provided some support for proposition 4. The greater the resolution of issues in one representative assembly and the greater the number of courses in which faculty cooperate in teaching, the larger the proportion of administrators in the dean's office. On the other hand, the larger the number of standing committees, the smaller the proportion of administrators to faculty. Through decomposition analysis, it was found that the three interdependency measures operate independently of each other and from the size and differentiation variables.

DISCUSSION AND IMPLICATIONS

The major findings in this study can be briefly summarized:

1. The pervasive effects of size on structure and the proportion of administrators, as established in prior studies, held true. Blau's (1973)

finding that size is related to the number of academic departments in an institution was confirmed in this analysis of subunits of academic organizations--the arts, science, and humanities colleges. Also consistent with Blau's (1973) analysis of entire institutions, this study established that the larger the arts, science, or humanities college, the smaller the proportion of administrators. The smaller proportion probably resulted because additional responsibilities caused by a large number of students or faculty were subsumed under existing administrators rather than adding administrators in the dean's office. In this day of fiscal economy, a widened span of control for existing administrators comes as no surprise.

2. The larger the number of students and departments, the smaller the proportion of administrators. While the inverse relationship between size and the proportion of administrators was confirmed, the number of departments was negatively rather than positively related to the proportion. This finding suggests that as the enrollments and number of departments become larger, the colleges tend to have smaller administrative staffs in the dean's office. Apparently, this small staff may be experiencing not only a wide span of responsibilities but also delegate to the departments a major role in decision-making. As a case in point, the decentralized system of authority was found in one arts and sciences college with twenty-eight departments and only two full-time administrators in the dean's office.

3. Contrary to expectations, little relationship existed between the differentiation of the colleges into departments and administrative layers and measures of faculty collaboration. It was interesting to note that the measures of interdependency had different relationships to the proportion of administrators. The collaboration of faculty in resolving issues had a positive impact on the proportion of administrators while the number of faculty standing committees had a negative impact. The type of collaborative

structure may provide some explanation for these results: faculty assemblies often originate from faculty initiatives while standing committees often develop through decisions made in the dean's office. The resolution of issues in faculty assemblies may require more coordination within the college and spur the dean to add staff; whereas the resolution of issues in standing committees formed by the dean may facilitate the desired coordination. Lawrence and Lorsch (1969) found more use of the formal hierarchy in an organization to achieve integration (or the same number of administrators) in stable or certain environments (standing committees within the control of the dean) than in uncertain environments (where major issues are resolved in faculty assemblies).

Several problems exist in extrapolating Blau's macrosociological approach to the study of academic colleges. First, the researcher must provide specific illustrations of Blau's theorems so that the translation of difficult terms like differentiation are meaningful. Hopefully, the examples provided in this discussion enabled the reader to follow the logical thought of the theorems. Second, Blau's theorems, even those stated for academic institutions (Blau, 1973), suggested a longitudinal analysis of data rather than the more precise cross-sectional analysis. This study used cross-sectional data; hence, causation cannot be established in this study and only inferences made to possible relationships. Third, Blau's theorems were based on the premise that organizations were growing in size and that such growth had an impact on the structure of the organization. One is reminded that Blau's work (1973) relied on data about institutions in the mid-1960's, a time of burgeoning enrollments in higher education. Since colleges are presently faced with stability or decline in enrollments, the implications of this study should be discussed noting the likely impact of diminishing size on structure. One impact may be that departments will

combine into broader subject areas. Although this trend has been noted in some colleges of arts, science, and humanities, it may escalate in the future as enrollments dwindle. When such collapsing begins, it will be interesting to note whether the number of administrators in the dean's office decreases. If the number remains the same and faculty are released, then the view of a top-heavy administrative structure will be true.

Another practical implication of this study is that in those colleges with a lower proportion of administrators, many more issues are probably dealt with by faculty standing committees than by a representative faculty assembly. Thus, it appeared that standing committees served as an important integrative mechanism for the deans and one that might be within their control during future days of a growing schism between faculty and administrators. Finally, the macrosociological approach provided an explanatory framework for the expected relationship between factors in the environment external to campus (size), those within the college (interdependency) and structural characteristics of the college. This approach holds promise as a systematic framework for studying colleges as they undergo structural changes in response to external and internal factors.

Table 1
Descriptive Data About The Structure
Of Arts, Science and Humanities Colleges

	<u>$\bar{x}$</u>	<u>S.D.</u>	<u>Range</u>	<u>N</u>
FTE Faculty (1st semester, 1978-79 academic year)	430	748	30-5670	57
Student Headcount (1st semester, 1978-79 academic year)	10954	12656	780-69274	53
Current Number of Teaching Departments	17.2	10.1	3-45	56
Administrative Levels (including the Dean as one level)	2.25	.521	2-4	54
Number of Full-Time Administrators in the Dean's Office (including the Dean)	4.42	2.86	1-16	57
Number of Faculty Standing Committees	8.46	7.51	1-42	57
Ratio of Administrators to Faculty	.019	.02	.001-.133	57

Table 2

Regression Analysis On Number Of Departments,
Hierarchical Levels, Proportion Of Administrators

(N=46)

	<u>Number Of Departments</u>		<u>Hierarchical Levels</u>		<u>Proportion Of Administrators</u>	
	<u>Beta Weight</u>	<u>Simple R</u>	<u>Beta Weight</u>	<u>Simple R</u>	<u>Beta Weight</u>	<u>Simple R</u>
Size of Student Enrollments	.29**	.39**	-.04	.10	-.14	-.25*
Ratio of Administrators to Faculty	-.23*	-.38	-.06	-.14	----	----
Number of Hierarchical Levels	.23	.29*	----	----	-.06	-.14
Workflow	-.13	-.16	.09	.05	.21	.24
Cooperation	-.09	-.25*	----	----	.05	.16
Size of Faculty (x^2 transformation)	.06	.15	-.08	-.05	-.05	-.14
Faculty Standing Committees	----	----	----	----	-.12	-.12
Departments	----	----	.31	.29*	-.26**	-.39**
	R=.57	R ² =.32	R=.32	R ² =.10	R=.47	R ² =.22

** p < .01

* p < .05

Appendix A

DEFINITIONS OF VARIABLES USED IN THE STUDY

<u>VARIABLE</u>	<u>TYPE VARIABLE</u>	<u>DEFINITION</u>
Size of Faculty (x^2)	Independent	The number of FTE faculty that taught in the college during the first semester of the 1978-79 academic year. Squared for transformation.
Size of Student Enrollment	Independent	Headcount of the number of students taking courses in the college during the first semester of the 1978-79 academic year.
Horizontal Differentiation (Departments)	Dependent	The number of teaching departments that exist in the college during the 1978-79 academic year.
Vertical Differentiation (Hierarchical Levels)	Dependent	The respondent was asked to indicate all of the administrative heads in the college and the title of the person to whom the administrator reports. A count was then made of the administrative layers in the college, and verified using any organizational charts available.
Ratio (Proportion of Administrative Personnel)	Dependent	The ratio of full-time administrators that work in the Dean's Office (and including the Dean) to the number of FTE faculty that taught in the college during the first semester of the 1978-79 academic year.
Interdependency (faculty Standing Committees)	Independent	The number of faculty standing committees in the college that exist during the 1978-79 academic year.
Interdependency (Workflow)	Independent	Measured by asking the Deans how an issue such as changing the number of courses in the general education program would be handled by the college: (1) worked out independently by individual faculty members (2) handed to committees in a give sequence

<u>VARIABLE</u>	<u>TYPE VARIABLE</u>	<u>DEFINITION</u>
Interdependency (Workflow)	Independent	(3) shuffled "back and forth" among faculty committees (4) worked on by one committee that is representative of the college faculty
Continued		
Interdependency (Cooperation)	Independent	Measured by asking the Deans to what extent do faculty cooperate in teaching undergraduate courses in their college: from a great deal of cooperation to very little cooperation.

REFERENCES

- Blau, Peter M. "A Formal Theory of Differentiation in Organizations." American Sociological Review, 35, (April, 1970) p. 201-218.
- Blau, Peter M. "The Hierarchy of Authority in Organizations." American Journal of Sociology, 73, (1968) p. 453-467.
- Blau, Peter M. "Interdependence and Hierarchy in Organizations." Social Science Research, 1, (1972) p. 1-24.
- Blau, Peter M. The Organization of Academic Work, New York: John Wiley and Sons, 1973.
- Blau, Peter M. and Richard A. Schoenherr. The Structure of Organizations, New York: Basic Books, Inc., 1971.
- Carnegie Commission on Higher Education. A Classification of Institutions of High Education, New York: McGraw-Hill, 1973.
- Child, John. "Predicting and Understanding Organization Structure." Administrative Science Quarterly, 18, (1973) p. 168-185.
- Creswell, John W. and Larry G. Jones. "A Study of the Structure of Colleges of Arts and Sciences at Five Major Universities." Liberal Education, LXIV, (March, 1978) p. 94-100.
- Hall, Richard H. Organizations: Structure and Process, Englewood Cliffs: Prentice-Hall, 1972.
- Kerlinger, Fred N. and Elazer J. Pedhazur. Multiple Regression in Behavioral Research, New York: Holt, Rinehart and Winston, 1973.
- Land, K. C. "Principals of Path Analysis." In E. F. Borgatta (Ed.) Sociological Methodology, 1969, San Francisco: Jossey-Bass.
- Mileti, Dennis S., David F. Gillespie, and J. Eugene Haas. "Size and Structure in Complex Organizations." Social Forces, (September, 1977) p. 208-217.
- Meyer, Marshall. "Size and the Structure of Organizations: A Causal Analysis." American Sociological Review, 37, (1972) p. 434-441.
- Mohr, Lawrence B. "Organizational Technology and Organizational Structure." Administrative Science Quarterly, 16, (1971) p. 444-459.
- Pugh, D. S., D. J. Hickson, C. R. Hinings and C. Turner. "Dimensions of Organizational Structures." Administrative Science Quarterly, 14, (March, 1968) p. 65-105.
- Spurr, Stephen H. "Organization of the Liberal Arts in the Large University." Journal of Higher Education, (January, 1968) p. 11-22.
- Van de Ven, Andrew H., Andre Delbecq and Richard Koenig, Jr. "Determinants of Coordination Modes Within Organizations." American Sociological Review, 41, (April, 1976) p. 322-338.